

parallel plate capacitors with the ceramic as the dielectric. Placing a capacitor adjacent to the silicon chip provides immediate charge stability to the power and ground voltages experienced by the silicon chip, reducing ground bounce and improving high speed switching characteristics of the integrated circuit device.

In the Claims

Please replace claims 1, 7, 9, and 10 and add new claims 13-15.

Claim #1 should be replaced with:

1. (Twice amended) A packaged integrated circuit device comprising:

a substrate having a recessed central region surrounded by a raised perimeter, the recessed central region and the perimeter being formed integrally from substantially the same material, the recessed central region having a plurality of contacts within the recessed central region for providing electrical connection from conductors external to the substrate to an integrated circuit device; and

an integrated circuit device formed with contacts on a top surface, flipped, and placed against the recessed central region of the substrate such that the contacts of the integrated circuit device meet the contacts of the recessed central region of the substrate.

Claim #7 should be replaced with:

7. (Amended) The packaged integrated circuit device of Claim 6 wherein the heat spreader further contacts the raised perimeter.

Claim #9 should be replaced with:

9. (Amended) The packaged integrated circuit device of Claim 1 wherein the raised perimeter includes electrical circuitry electrically connected to power and ground contacts of the integrated circuit device.

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Claim #10 should be replaced with:

10. (Amended) An integrated circuit package substrate comprising:

a recessed central region having a plurality of contacts for providing electrical contact to an integrated circuit device; and

a raised peripheral area including at least one by-pass capacitor connected to contacts within the recessed central region, wherein the raised peripheral area is formed integrally with the substrate.

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Please add claim # 13:

13. (New) A packaged integrated circuit device comprising:

a substrate having a recessed central region surrounded by a raised perimeter, the recessed central region and the perimeter comprising substantially the same material, the recessed central region having a plurality of contacts within the recessed central region for providing electrical connection from conductors external to the substrate to an integrated circuit device;

an integrated circuit device formed with contacts on a top surface, flipped, and placed against the recessed central region of the substrate such that the contacts of the integrated circuit device meet the contacts of the recessed central region of the substrate; and

a heat spreader connected to the integrated circuit device with thermal grease, wherein the integrated circuit device and the heat spreader are recessed such that an upper surface of the heat spreader is planar with an upper surface of the raised perimeter.

Please add claim # 14:

14. (New) The packaged integrated circuit device of Claim 13 wherein the raised perimeter includes electrical circuitry electrically connected to power and ground contacts of the integrated circuit device.

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Please add claim # 15:

15. (New) The packaged integrated circuit device of Claim 9 wherein the electrical circuitry includes a by-pass capacitor.
